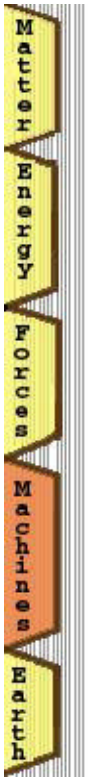
Pulley



A **pulley** is a chain, belt or rope wrapped around a wheel. The mechanical advantage of a pulley system is approximately equal to the amount of supporting ropes or strands.

Therefor, if you had a mass of 60kg and wanted to lift it using two supporting ropes, you would have mechanical advantage (MA) of 2. The mass will feel like one half of what it really is. When lifted with the help of the pulley system your 60kg would only feel like 30kg. Thus the effort force equals 30kg.


In the above example (middle photo) count how many supporting stings there are. That will be the approximate mechanical advantage (MA). When you move the mouse over the center image notice the effort force distance is approximately 6 times as far as the mass moves up. The effort distance and resistance difference change but not the amount of work. The amount of work does not change.

For practice figure the following mechanical advantage (MA) problems.

1. If a pulley setup has three supporting strands, what would be the MA of the setup?(3)
2. If the weight of an object being lifted is 100 kg and the number of supporting ropes the pulley system has is four; what would be the systems MA? (4) How much effort weight would you actually be lifting? (25 kg)
3. The weight of an object is 30 kg, the mechanical advantage is three, how much effort weight would you need to raise the object? (10 kg)

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